

WEST JAMES STREET BRIDGE

(Redfield Viaduct)

Arkansas Bridges 2005

Spanning Union Pacific Railroad at West James Street

Redfield

Jefferson County

Arkansas

HAER AR-78

AR-78

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

U.S. Department of the Interior

1849 C Street NW

Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD

WEST JAMES STREET BRIDGE (Redfield Viaduct)

HAER No. AR-78

LOCATION: Spanning Union Pacific Railroad (formerly Missouri Pacific Railroad) at West James Street (formerly Williams Street), Redfield, Jefferson County, Arkansas
UTM: 15.574875.3811904

AHTD #: 19224

STRUCTURAL TYPE: Timber trestle

DATE OF CONSTRUCTION: ca. 1924

BUILDER: Missouri Pacific Railroad

OWNER: City of Redfield, Arkansas

USE: Vehicular bridge

SIGNIFICANCE: West James Street Bridge is a rare, intact example of an Arkansas timber trestle highway bridge. It is a significant landmark in Redfield, a town brought into existence by the Little Rock, Mississippi & Texas Railroad, later a part of the Missouri Pacific system.

HISTORIAN: Researched and written by Lola Bennett, Summer 2005

PROJECT INFORMATION: The Arkansas Historic Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program that documents and interprets historically significant engineering sites and structures in the United States. HAER is administered by the Heritage Documentation Programs Division of the National Park Service, United States Department of the Interior. The Arkansas State Highway and Transportation Department cosponsored and funded the project.

Chronology

- 1855 First railroad enters Arkansas
- 1870 Little Rock, Mississippi River & Texas Railroad chartered
- 1873 Little Rock, Mississippi River & Texas Railroad completed to Pine Bluff
- 1876 Redfield station appears on Frank A. Gray's map of Arkansas
- 1880 James Kirkwood Brodie plats town of Redfield
- 1881 Little Rock, Mississippi River & Texas Railroad completed from Pine Bluff to Little Rock
- 1885 Redfield population totals 400
- 1887 St. Louis, Iron Mountain & Southern Railroad Company takes over line
- 1896 Town of Redfield incorporated; population totals 500
- 1917 Missouri Pacific Railroad takes over line
- 1924 West James Street Overpass constructed
- 1986 West James Street Overpass closed for repairs
- 1995 West James Street Overpass listed on the National Register of Historic Places
- 2005 West James Street Overpass recorded by the Historic American Engineering Record

Description

The West James Street Overpass is a six-span timber trestle viaduct with a cambered, reinforced concrete slab deck. The overpass is 130' long, 20' wide and 30' high at center span. It originally spanned two tracks, but the westerly track has been removed.

The deck is supported on framed timber bents, comprised of four vertical squared timber posts on concrete footings, with horizontal timber caps and diagonal sway-bracing. The center bent is freestanding. The timbers are bolted together, with cast iron washers under the head of each bolt to distribute the stress over a larger area.

The deck is comprised of twelve lines of timber stringers, with bridging between them, on top of the bents. The stringers support a concrete slab deck. There is a concrete sidewalk on the south side of the roadway. The railings are comprised of concrete posts and metal pipe rails.

History

In 1870 the Little Rock, Mississippi River & Texas Railroad was chartered to lay a railroad line from the Mississippi River at Chicot to Little Rock. In 1873, the line was completed as far as Pine Bluff when the company ran out of money. Plans to extend the railroad resumed in 1879 and shortly thereafter, James Kirkwood Brodie purchased a 163-acre tract of land at Redfield, a station named for railroad company president John E. Redfield.

The railroad line was completed from Little Rock to Pine Bluff in 1880 and the town of Redfield grew rapidly. Within a year, the *Arkansas Gazette* reported, “Redfield, on the Pine Bluff and Little Rock road ... [has] become an important town. Lots are rating high and improvements are going on, and the country round about is rapidly settling up with farms.”¹

By 1885, the community had grown to 400 residents and a correspondent to the newspaper reported, “You can scarcely look in any direction without noticing some new building going up.”² When Redfield was incorporated in 1896, it had a population of 500 people, four churches, a saw mill, two grist mills, three hotels and three general stores.³

In 1892, the Redfield depot was located at the end of James Street on the east side of the railroad tracks. Present-day West James Street was known as Williams Street at that time.⁴ According to former Redfield resident Joel Robinson (1893-1988), the site of the West James Street Overpass was originally a “big high hill,” where a switch engine was required to push loaded trains over the steep grade.⁵

¹ *Arkansas Gazette*, 19 May 1881.

² “A Thriving Arkansas Town,” *Arkansas Gazette*, 16 April 1885.

³ *Pine Bluff Semi-Weekly Graphic* (Pine Bluff, Arkansas), 8 August 1896.

⁴ J.K. Brodie, [Plat Map] “Red Field, Jefferson County, Arkansas, 22 June 1892,” Jefferson County, Office of the Circuit Court Clerk, Pine Bluff, Arkansas.

⁵ “Redfield History: Interview of Joel Robinson,” *Redfield Update, Centennial Edition*, 18 October 1998, 21.

At an unknown date between 1892 and 1920, the railroad company cut through the hill at James Street and built a wooden bridge over the right-of-way. While no written records have been found to date concerning that structure, it may have been built around 1917, when the Missouri Pacific Railroad took over the line. The present timber trestle was reportedly built in 1924 to replace an “*old wooden bridge*,” but no primary sources have been found concerning its construction.⁶ It is likely that the bridge was built in accordance with an agreement between the city or county government and the Missouri Pacific Railroad.

Design

A trestle is a modification of the ancient pile-and-beam bridge in which the piles are braced together to form bents. Julius Caesar built one of the first recorded pile-and-beam bridges across the Rhine River in 55 BC. Maj. Samuel Seawell built the first timber pile span in the American colonies at York in 1761.

Truss bridges, which could span greater distances, superceded pile-and-beam bridges in the early nineteenth century. Railroads, however, used the concept of the pile-and-beam bridge to develop the “*uniquely American bridge form*” of the trestle.⁷ Some of the longest and highest timber trestle bridges ever were built on railroad lines in the West, including the Southern Pacific’s 12-mile Ogden-Lucin Cutoff Trestle (1904) across the Great Salt Lake in Utah.⁸

Timber trestles were common on North American railroads because they could be built quickly and economically in areas where timber was readily available. As historian Wolcott C. Foster observed in 1913:

*The great extent to which timber trestling has been adopted in this country is one of the principle factors in the economy of construction and rapidity of completion which have been characteristic of American railway work.*⁹

Although timber trestle roadway bridges are relatively rare, there is at least one other extant example in Arkansas: the Fourteenth Street Overpass (see HAER No. AR-42), built circa 1925 in Pulaski County by the Missouri Pacific Railroad.

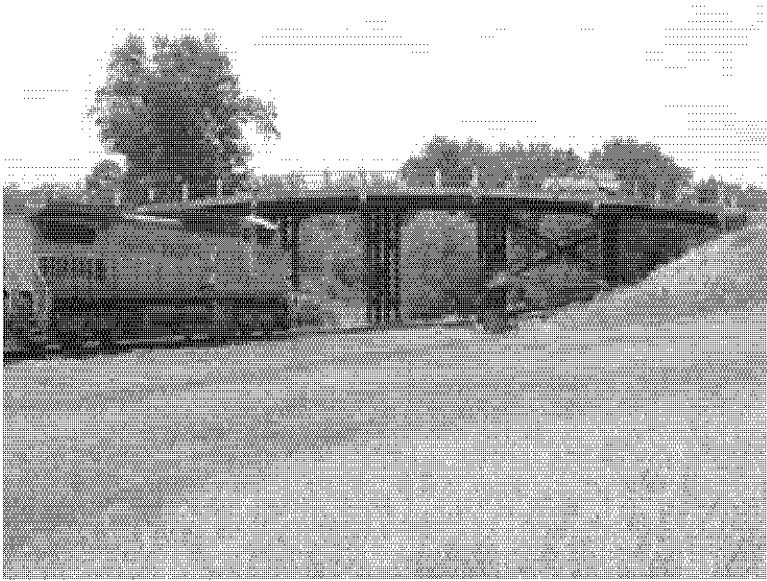
⁶ “Community Tied to Railroad Growth,” *Pine Bluff Commercial* (Pine Bluff, Arkansas), 3 July 1972. Research in Jefferson County Court Records, 1920-28 uncovered no references to this structure and no records were located at Redfield City Hall. Missouri Pacific Railroad Company records have not been investigated.

⁷ David Plowden, *Bridges: The Spans of North America*, revised edition (New York: W.W. Norton & Co., 2002), 35.

⁸ See HAER No. UT-13, Southern Pacific Railroad, Ogden-Lucin Cutoff Trestle.

⁹ Wolcott C. Foster, *A Treatise on Wooden Trestle Bridges* (New York: John Wiley & Sons, 1913).

Appendix A: Field Photographs



Elevation view at
left; perspective
view below. Field
photographs by
Lola Bennett.



Sources

- Arkansas Highway and Transportation Department. *Bridge Records: Bridge No. 19224*.
- “A Thriving Arkansas Town,” *Arkansas Gazette*, 16 April 1885.
- Balfour, R. “Hints on the Design and Construction of Wooden Trestles.” *Engineering News*, 6 June 1907.
- Berg, Walter C. *Buildings and Structures of American Railroads*. New York: John Wiley & Sons, 1893.
- Brodie, J.K. [Plat Map] “Red Field, Jefferson County, Arkansas, 22 June 1892.” Jefferson County, Office of the Circuit Court Clerk, Pine Bluff, Arkansas.
- Foster, Wolcott C. *A Treatise on Wooden Trestle Bridges*. New York: John Wiley & Sons, 1913.
- Greiner, J.E. “The American Railroad Viaduct, its Origin and Evolution.” *Transactions of the American Society of Civil Engineers* 26 (October 1891): 349-361.
- Gribble, C. “Railway Bridges of Moderate Span.” *Cassier's Magazine* 34 (1908): 210.
- Hull, Clifton E. *Railroad Stations and Trains through Arkansas and the Southeast*. Hart, Missouri: White River Productions, 1997.
- Hull, Clifton E. *Shortline Railroads of Arkansas*. Norman: University of Oklahoma Press, 1969.
- Jefferson County Atlas*, 1905.
- Leslie, James W. “Redfield History Tied to Railroad Growth.” *Pine Bluff Commercial* (Pine Bluff, Arkansas), 9 July 1978, 15.
- Missouri Pacific Railroad Company: Maintenance of Way Standard Drawings*, Volume 1. St. Louis: Missouri Pacific Historical Society, 1999.
- Redfield Update, Centennial Edition* (Redfield, Arkansas), 18 October 1998.
- Story, Ken. National Register of Historic Places Registration Form: “West James Street Overpass,” Jefferson County, Arkansas, 1995.
- Tyrrell, Henry Grattan. *History of Bridge Engineering*. Chicago: Henry Grattan Tyrrell, 1911.
- Wood, Stephen E. “The Development of Arkansas Railroads.” *Arkansas Historical Quarterly* 7 (Summer 1948).